

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of )  
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Hyuk CHANG et al ) Group Art Unit: Unassigned  
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Application No.: Unassigned ) Examiner: Unassigned  
 )  
Filed: Concurrently herewith )  
 )  
For: MONOPOLAR CELL PACK OF )  
 )  
PROTON EXCHANGE MEMBRANE )  
 )  
FUEL CELL AND DIRECT )  
 )  
METHANOL FUEL CELL )  
 )

**PRELIMINARY AMENDMENT**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Prior to examination, kindly amend the above-identified application in the following manner.

**IN THE SPECIFICATION:**

Kindly replace paragraph 44 with the following:

As shown in FIG. 5, a hollow 18 is provided between the two cells. An electrical connection member 15 for electrically connecting the cathode collector plate 14a of one cell to the anode collector plate 13b of the other cell is disposed within the hollow 18. The electrical connection member 15 is preferably configured in the form of a mesh passing the fuel to have a sufficient width so that its area contacting the collector plates 14a and 13b can be large and to prevent the electrical connection member 15 from obstructing the flow

of fuel within the hollow 18. In addition, the electrical connection member 15 is preferably formed of nickel, considering corrosion-resistance against fuel. When the electrical connection member 15 is not a mesh, its width should be narrowed so that it does not obstruct the flow of fuel if possible.

Kindly replace paragraph 47 with the following:

A preferred configuration for extending the area on which the air contact members 22a and 22b contact the air in such a structure described above is shown in FIGS. 4 through 7. The cathode collector plates 14a and 14b in the two cells have through holes 141a and 141b, and the cathode end plate 12 has through holes 121a and 121b. The through holes 141a and 141b correspond to the through holes 121a and 121b one to one.

#### **IN THE CLAIMS:**

Kindly replace Claims 1, 6, 9, 14 and 15 as follows:

1. (Amended) A fuel cell pack including a plurality of cells each having a membrane, a cathode at one side of the membrane and an anode at another side of the membrane, collector plates contacting the cathode and the anode, respectively, in each cell, and an electrical connection member for electrically connecting adjacent cells, at least two cells being provided, the cells being evenly disposed on an arbitrary plane with a hollow interposed between two adjacent cells, the electrical connection member being positioned in the hollow, the fuel cell pack comprising:

a porous fuel diffusion member contacting the anode of each cell;

a porous air contact member contacting the cathode of each cell;

an anode end plate and a cathode end plate disposed at the side of the anodes of the cells and at the side of the cathodes of the cells, respectively, for protecting the cells;

fuel supply and discharge means for supplying fuel toward the anodes in the hollow and discharging the fuel;

a fuel flow stopper disposed at a portion at the part of the cathodes in the hollow, the fuel flow stopper preventing fuel flowing at a portion at the part of the anodes in the hollow from flowing toward the portion at the part of the cathodes in the hollow; and

a sealing member for sealing the anodes of the cells and the portion of the hollow corresponding to the anodes.

6. (Amended) The fuel cell pack of Claim 1, wherein the porous air contact member has a plurality of channels for the flow of air on the bottom thereof.

9. (Amended) A fuel cell pack including a plurality of cells each having a membrane, a cathode at one side of the membrane and an anode at another side of the membrane, collector plates contacting the cathode and the anode, respectively, in each cell, and an electrical connection member for electrically connecting adjacent cells, at least two cells being provided, the cells being disposed on both sides of an intermediate layer, which is provided with fuel supply and discharge means, with a hollow of predetermined volume interposed between two adjacent cells in the level direction of the intermediate layer, the

electrical connection member being disposed in the hollow, the anodes of the cells disposed on both sides of the intermediate layer contacting the intermediate layer, the fuel cell pack comprising:

a porous fuel diffusion member contacting the anode of each cell;

a porous air contact member contacting the cathode of each cell;

first and second end plates disposed at the respective sides of the cathodes of the cells, for protecting the cells;

a fuel flow stopper disposed at a portion corresponding to the cathodes of adjacent cells in a hollow, the fuel flow stopper preventing fuel flowing at a portion at the part of the anodes in the hollow from flowing toward the portion at the part of the cathodes in the hollow; and

a sealing member for sealing the anodes of the cells and the portion of a hollow corresponding to the anodes.

14. (Amended) The fuel cell pack of Claim 9, wherein the porous air contact member is formed of a carbon-plastic composite.

15. (Amended) The fuel cell pack of Claim 9, wherein the air contact member has a plurality of channels for the flow of air on the bottom thereof.

**REMARKS**

Entry of the foregoing prior to examination on the merits is respectfully requested.

By the above amendments, the specification has been amended to correct typographical errors. Claims 1, 6, 9 and 15 have been amended for readability. Claim 14 has been amended to correct a typographical error.

If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at the Examiner's earliest convenience.

Respectfully submitted,

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Date: March 14, 2001

**Attachment to Preliminary Amendment**

**Marked-up specification**

Paragraph 44:

As shown in FIG. 5, a hollow 18 is provided between the two cells. An electrical connection member 15 for electrically connecting the cathode collector plate 14a of one cell to the anode collector plate 13b of the other cell is disposed within the hollow 18. The electrical connection member 15 is preferably configured in the form of a mesh passing the fuel to have a sufficient width so that its area contacting the collector plates 14a and 13b can be large and [o] to prevent the electrical connection member 15 from obstructing the flow of fuel within the hollow 18. In addition, the electrical connection member 15 is preferably formed of nickel, considering corrosion-resistance against fuel. When the electrical connection member 15 is not a mesh, its width should be narrowed so that it does not obstruct the flow of fuel if possible.

**Attachment to Preliminary Amendment**

**Marked-up specification**

Paragraph 47:

A preferred configuration for extending the [an] area on which the air contact members 22a and 22b contact the air in such a structure described above is shown in FIGS. 4 through 7. The cathode collector plates 14a and 14b in the two cells have through holes 141a and 141b, and the cathode end plate 12 has [though] through holes 121a and 121b. The [though] through holes 141a and 141b correspond to the through holes 121a and 121b one to one.

**Attachment to Preliminary Amendment**

**Marked-up Claims 1, 6, 9, 14 and 15**

1. (Amended) A fuel cell pack including a plurality of cells each having a membrane, [in its middle and] a cathode at one side of the membrane and an anode [at both sides] at another side of the membrane, collector plates contacting the cathode and the anode, respectively, in each cell, and an electrical connection member for electrically connecting adjacent cells, at least two cells being provided, the cells being evenly disposed on an arbitrary plane with a hollow interposed between two adjacent cells, the electrical connection member being positioned in the hollow, the fuel cell pack comprising:

a porous fuel diffusion member contacting the anode of each cell;

a porous air contact member contacting the cathode of each cell;

an anode end plate and a cathode end plate disposed at the side of the anodes of the cells and at the side of the cathodes of the cells, respectively, for protecting the cells;

fuel supply and discharge means for supplying fuel toward the anodes in the hollow and discharging the fuel;

a fuel flow stopper disposed at a portion at the part of the cathodes in the hollow, the fuel flow stopper preventing fuel flowing at a portion at the part of the anodes in the hollow from flowing toward the portion at the part of the cathodes in the hollow; and

a sealing member for sealing the anodes of the cells and the portion of the hollow corresponding to the anodes.



**Attachment to Preliminary Amendment**

**Marked-up Claims 1, 6, 9, 14 and 15**

6. (Amended) The fuel cell pack of Claim 1, wherein the porous air contact member has a plurality of channels for the flow of air on [its bottom] the bottom thereof.

9. (Amended) A fuel cell pack including a plurality of cells each having a membrane, [in its middle and] a cathode at one side of the membrane and an anode [at both sides] at another side of the membrane, collector plates contacting the cathode and the anode, respectively, in each cell, and an electrical connection member for electrically connecting adjacent cells, at least two cells being provided, the cells being disposed on both sides of an intermediate layer, which is provided with fuel supply and discharge means, with a hollow of predetermined volume interposed between two adjacent cells in the level direction of the intermediate layer, the electrical connection member being disposed in the hollow, the anodes of the cells disposed on both sides of the intermediate layer contacting the intermediate layer, the fuel cell pack comprising:

a porous fuel diffusion member contacting the anode of each cell;

a porous air contact member contacting the cathode of each cell;

first and second end plates disposed at the respective sides of the cathodes of the cells, for protecting the cells;

a fuel flow stopper disposed at a portion corresponding to the cathodes of adjacent cells in a hollow, the fuel flow stopper preventing fuel flowing at a portion at the part of

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**Marked-up Claims 1, 6, 9, 14 and 15**

the anodes in the hollow from flowing toward the portion at the part of the cathodes in the hollow; and

a sealing member for sealing the anodes of the cells and the portion of a hollow corresponding to the anodes.

14. (Amended) The fuel cell pack of Claim 9, wherein the porous air contact member is formed of a [carton-plastic] carbon-plastic composite.

15. (Amended) The fuel cell pack of Claim 9, wherein the air contact member has a plurality of channels for the flow of air on [its bottom] the bottom thereof.